

What is claimed is:

1. A motion vector detecting device comprising:

a data providing portion for providing template block data which defines pixel

5 data in a template block and search window data which defines pixel data in a search window sized to contain said template block, said data providing portion serving such that chrominance pixel data is contained in said template block data and said search window data according to a predetermined rule in a chrominance signal containing mode;

an operational portion for calculating an evaluation value by performing a

10 predetermined inter-pixel calculation between corresponding pieces of pixel data in said template block data and search window block data which is data in a search window block as a part of said search window, each time said search window block data is varied by using said search window data so that a displacement vector which shows a change in position of said template block from an initial position in said search window is varied;

15 and

a comparator portion for performing a comparison between said evaluation values corresponding to said displacement vectors and detecting a motion vector on the basis of the result of the comparison.

20 2. The motion vector detecting device according to claim 1, further comprising:

a control portion for outputting a mode signal to said input portion, said mode signal indicating whether the mode is said chrominance signal containing mode.

25 3. The motion vector detecting device according to claim 1, wherein

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5 said chrominance signal containing mode includes a chrominance signal mode,  
said data providing portion includes a data providing portion serving such that  
only said chrominance pixel data is contained in said template block data and said search  
window data according to said predetermined rule in said chrominance signal mode, said  
chrominance pixel data including first chrominance pixel data and second chrominance  
pixel data.

said control portion outputs said mode signal also to said comparator portion,

and

10 said comparator portion includes a comparator portion judging whether said evaluation values are valid or invalid on the basis of whether the chrominance pixel data types agree or disagree between the corresponding pieces of pixel data in said template block data and said search window block data on the basis of said displacement vectors in said chrominance signal mode, to perform said comparison between said evaluation values judged to be valid corresponding to said displacement vectors.

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4. The motion vector detecting device according to claim 1, wherein

chrominance signal containing mode includes a luminance and chrominance mix mode.

20 said data providing portion includes a data providing portion serving such that  
said luminance pixel data and said chrominance pixel data are contained in said template  
block data and said search window data according to said predetermined rule in said  
luminance and chrominance mix mode.

and said control portion outputs said mode signal also to said comparator portion,

25 said comparator portion includes a comparator portion judging whether said

evaluation values are valid or invalid on the basis of whether the pixel data types agree or disagree between the corresponding pieces of pixel data in said template block data and said search window block data on the basis of said displacement vectors in said luminance and chrominance mix mode, to perform said comparison between said evaluation values judged to be valid corresponding to said displacement vectors.

5. The motion vector detecting device according to claim 4, wherein

chrominance pixel data includes first chrominance pixel data and second chrominance pixel data, and

10 said pixel data types includes the first chrominance pixel data and the second chrominance pixel data.

6. The motion vector detecting device according to claim 4, wherein

said operational portion includes an operational portion assigning weights to

said luminance pixel data heavier than said chrominance pixel data to perform said predetermined inter-pixel calculation when the type of said pixel data subjected to said predetermined inter-pixel calculation is said luminance pixel data.

7. The motion vector detecting device according to claim 6, wherein

20 said operational portion includes an operational portion further multiplying the result of said predetermined inter-pixel calculation by  $1/K$  ( $K > 1$ ) when the type of said pixel data subjected to said predetermined inter-pixel calculation is said chrominance pixel data.

8. The motion vector detecting device according to claim 6, wherein

said operational portion includes an operational portion setting a predetermined number of low-order bit or bits to 0 in the result of said predetermined inter-pixel calculation when the type of said pixel data subjected to said predetermined inter-pixel calculation is said chrominance pixel data.

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9. A motion vector detecting method comprising the steps of:

(a) providing template block data which defines pixel data in a template block and search window data which defines pixel data in a search window sized to contain said template block, wherein chrominance pixel data is contained in said template block data and said search window data according to a predetermined rule in a chrominance signal containing mode;

(b) calculating an evaluation value by performing a predetermined inter-pixel calculation between corresponding pieces of pixel data in said template block data and search window block data which is data in a search window block as a part of said search window, each time said search window block data is varied by using said search window data so that a displacement vector which shows the relative position of said search window block with respect to said template block is varied; and

(c) performing a comparison between said evaluation values corresponding to said displacement vectors and detecting a motion vector on the basis of the result of the comparison.

10. The motion vector detecting method according to claim 9, wherein  
said chrominance signal containing mode includes a chrominance signal mode,  
said step (a) includes a step of serving such that only said chrominance pixel  
25 data is contained in said template block data and said search window data according to

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said predetermined rule in said chrominance signal mode, said chrominance pixel data including first chrominance pixel data and second chrominance pixel data, and

15 said step (c) comprises a step of judging whether said evaluation values are valid or invalid on the basis of whether the chrominance pixel data types agree or disagree between the corresponding pieces of pixel data in said template block data and said search window block data on the basis of said displacement vectors in said chrominance signal mode, to perform said comparison between said evaluation values judged to be valid corresponding to said displacement vectors.

10 11. The motion vector detecting method according to claim 9, wherein

15 said chrominance signal containing mode includes a luminance and chrominance mix mode,

20 said step (a) includes a step of serving such that said luminance pixel data and said chrominance pixel data are contained in said template block data and said search window data according to said predetermined rule in said luminance and chrominance mix mode, and

25 said step (c) includes a step of judging whether said evaluation values are valid or invalid on the basis of whether the pixel data types agree or disagree between the corresponding pieces of pixel data in said template block data and said search window block data on the basis of said displacement vectors in said luminance and chrominance mix mode, to perform said comparison between said evaluation values judged to be valid corresponding to said displacement vectors.

12. The motion vector detecting method according to claim 11, wherein

25 said chrominance pixel data includes first chrominance pixel data and second

chrominance pixel data, and

5 said pixel data types include the first chrominance pixel data and the second chrominance pixel data.

10 13. The motion vector detecting method according to claim 11, wherein  
said step (b) includes a step of assigning weights to said luminance pixel data  
heavier than said chrominance pixel data to perform said predetermined inter-pixel  
calculation when the type of said pixel data subjected to said predetermined inter-pixel  
calculation is said luminance pixel data.

15 14. The motion vector detecting method according to claim 13, wherein  
when the type of said pixel data subjected to said predetermined inter-pixel  
calculation is said chrominance pixel data, said step (b) includes the steps of,  
(b-1) obtaining a result through said predetermined inter-pixel calculation, and  
(b-2) further multiplying the result obtained in said step (b-1) by  $1/K$  ( $K > 1$ ).

20 15. The motion vector detecting method according to claim 13, wherein  
when the type of said pixel data subjected to said predetermined inter-pixel  
calculation is said chrominance pixel data, said step (b) includes the steps of,  
(b-1) obtaining a result through said predetermined inter-pixel calculation, and  
(b-2) setting a predetermined number of lower-order bit or bits to 0 in the result  
obtained in said step (b-1).

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